Home Work Assignment 5

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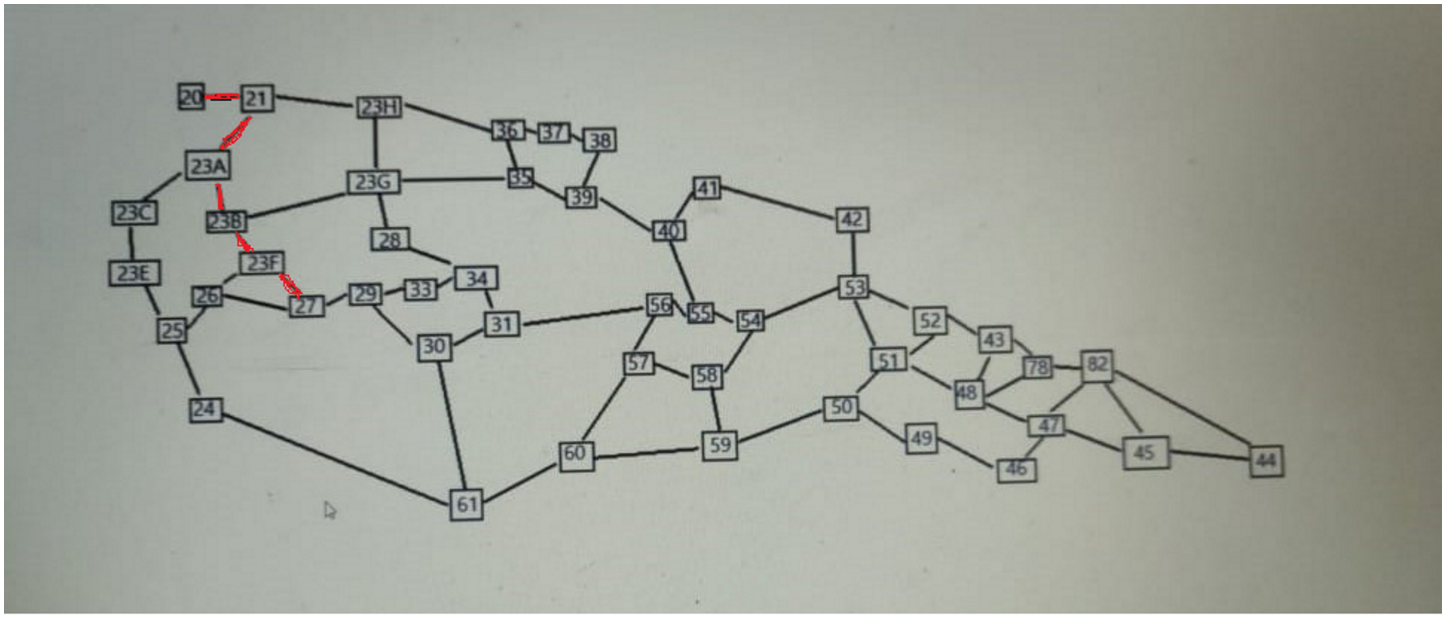
Name : VIKAS VEERABATHINI
NU ID : 001302155

Please find the undirected graph of NU campus map as below (without weights , adding weights was causing a blur in the graph , making it inconvenient . Inlining the weights of edges and graphs at the end of page) .

Highlighted the test case in red (from source : **20** to destination : **27**)



20 : Rubenstein hall .
27 : O'Bryant African American Institute (AF)

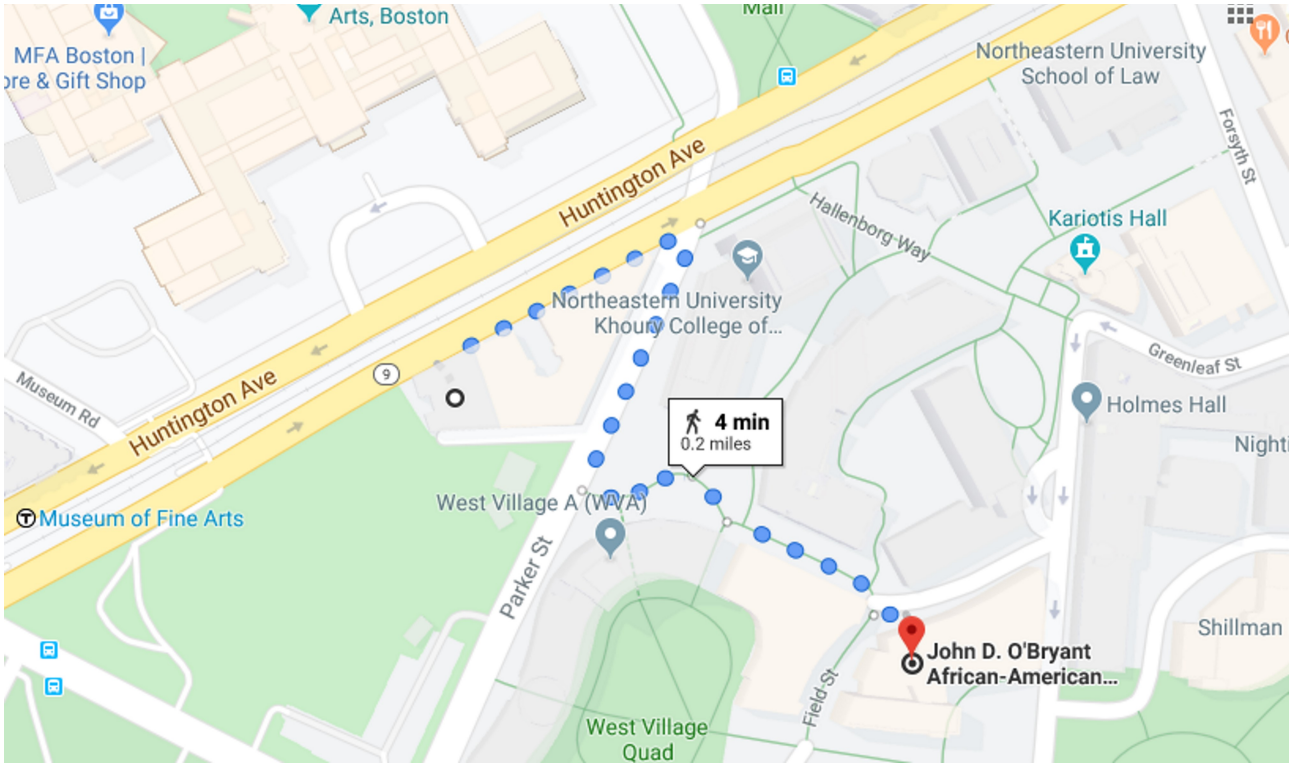
Please find sample output as below :

Enter Source element for shortest path calculations :
20

Enter Destination element for shortest path calculations
27

Shortest Path :
27<-23f<-23b<-23a<-20

Shortest Path Distance between source : 20 and destination : 27 is : **0.21**



Program gives out a shortest path distance as **0.21 miles** while google maps gives it out as **0.2miles** as shown in above snip of picture .

Graphs Data (Generated by the C-file post parsing input text file) :

Source Node :45
-> Length : 0.06 -> Node : 46
-> Length : 0.06 -> Node : 47
-> Length : 0.09 -> Node : 82
Source Node :46
-> Length : 0.06 -> Node : 45
-> Length : 0.05 -> Node : 47
-> Length : 0.07 -> Node : 49
Source Node :47
-> Length : 0.06 -> Node : 45
-> Length : 0.04 -> Node : 82
-> Length : 0.04 -> Node : 48
Source Node :82
-> Length : 0.09 -> Node : 45
-> Length : 0.04 -> Node : 78
Source Node :49
-> Length : 0.07 -> Node : 46
-> Length : 0.06 -> Node : 50
-> Length : 0.07 -> Node : 48
Source Node :48
-> Length : 0.04 -> Node : 47
-> Length : 0.08 -> Node : 51
-> Length : 0.06 -> Node : 78
Source Node :78
-> Length : 0.04 -> Node : 82
-> Length : 0.03 -> Node : 43
Source Node :50
-> Length : 0.06 -> Node : 49
-> Length : 0.05 -> Node : 51
-> Length : 0.11 -> Node : 54
-> Length : 0.09 -> Node : 59

Source Node :51
 -> Length : 0.08 -> Node : 48
 -> Length : 0.05 -> Node : 53
Source Node :43
 -> Length : 0.03 -> Node : 78
 -> Length : 0.05 -> Node : 52
 -> Length : 0.08 -> Node : 42
Source Node :52
 -> Length : 0.05 -> Node : 43
 -> Length : 0.06 -> Node : 42
 -> Length : 0.02 -> Node : 51
Source Node :42
 -> Length : 0.08 -> Node : 43
 -> Length : 0.09 -> Node : 41
Source Node :53
 -> Length : 0.05 -> Node : 51
 -> Length : 0.06 -> Node : 54
 -> Length : 0.1 -> Node : 41
Source Node :54
 -> Length : 0.11 -> Node : 50
 -> Length : 0.05 -> Node : 58
 -> Length : 0.06 -> Node : 55
Source Node :41
 -> Length : 0.1 -> Node : 53
 -> Length : 0.09 -> Node : 38
Source Node :59
 -> Length : 0.09 -> Node : 50
 -> Length : 0.1 -> Node : 60
 -> Length : 0.06 -> Node : 58
Source Node :60
 -> Length : 0.1 -> Node : 59
 -> Length : 0.05 -> Node : 57
 -> Length : 0.02 -> Node : 24
Source Node :58
 -> Length : 0.06 -> Node : 59
Source Node :55
 -> Length : 0.06 -> Node : 54
 -> Length : 0.07 -> Node : 58
 -> Length : 0.06 -> Node : 40
 -> Length : 0.06 -> Node : 39
 -> Length : 0.05 -> Node : 56
Source Node :40
 -> Length : 0.06 -> Node : 55
 -> Length : 0.05 -> Node : 41
 -> Length : 0.08 -> Node : 38
 -> Length : 0.05 -> Node : 39
Source Node :38
 -> Length : 0.09 -> Node : 41
 -> Length : 0.04 -> Node : 37
Source Node :39
 -> Length : 0.05 -> Node : 40
 -> Length : 0.03 -> Node : 35
Source Node :56
 -> Length : 0.05 -> Node : 55
 -> Length : 0.03 -> Node : 31
Source Node :31
 -> Length : 0.03 -> Node : 56
 -> Length : 0.03 -> Node : 34
Source Node :37
 -> Length : 0.04 -> Node : 38
 -> Length : 0.03 -> Node : 36
Source Node :35
 -> Length : 0.03 -> Node : 39
 -> Length : 0.07 -> Node : 36
Source Node :57

-> Length : 0.07 -> Node : 30
-> Length : 0.03 -> Node : 56
-> Length : 0.04 -> Node : 58
Source Node :30
-> Length : 0.07 -> Node : 57
-> Length : 0.06 -> Node : 29
Source Node :24
-> Length : 0.02 -> Node : 60
-> Length : 0.11 -> Node : 29
-> Length : 0.06 -> Node : 25
Source Node :29
-> Length : 0.06 -> Node : 30
-> Length : 0.03 -> Node : 33
-> Length : 0.03 -> Node : 27
Source Node :33
-> Length : 0.03 -> Node : 29
-> Length : 0.06 -> Node : 28
Source Node :28
-> Length : 0.06 -> Node : 33
-> Length : 0.04 -> Node : 23g
Source Node :34
-> Length : 0.07 -> Node : 28
-> Length : 0.05 -> Node : 35
Source Node :36
-> Length : 0.07 -> Node : 35
-> Length : 0.06 -> Node : 23h
Source Node :23h
-> Length : 0.06 -> Node : 36
Source Node :27
-> Length : 0.03 -> Node : 29
-> Length : 0.02 -> Node : 23f
Source Node :23f
-> Length : 0.02 -> Node : 27
Source Node :23g
-> Length : 0.04 -> Node : 28
-> Length : 0.06 -> Node : 23h
-> Length : 0.07 -> Node : 23f
-> Length : 0.08 -> Node : 21
Source Node :26
-> Length : 0.06 -> Node : 23f
Source Node :25
-> Length : 0.04 -> Node : 26
-> Length : 0.06 -> Node : 23e
Source Node :23e
-> Length : 0.06 -> Node : 25
-> Length : 0.04 -> Node : 23c
Source Node :23c
-> Length : 0.04 -> Node : 23e
-> Length : 0.09 -> Node : 23a
Source Node :23a
-> Length : 0.09 -> Node : 23c
-> Length : 0.07 -> Node : 20
-> Length : 0.07 -> Node : 23b
Source Node :20
-> Length : 0.07 -> Node : 23a
-> Length : 0.03 -> Node : 21
Source Node :21
-> Length : 0.03 -> Node : 20
-> Length : 0.06 -> Node : 23h
Source Node :23b
-> Length : 0.07 -> Node : 23a
-> Length : 0.05 -> Node : 23f
-> Length : 0.05 -> Node : 23g